AMENDMENTS TO THE CLAIMS:

Please amend the claims as indicated below. This listing of claims will replace all prior versions and listings of claims in the application.

1 - 24. (Cancelled)

25. (Currently Amended) A ~~tuneable~~ tunable laser system configured to emit output radiation on a single longitudinal mode at a laser emission frequency, comprising:

an external cavity having a physical length and a plurality of cavity modes;

a gain medium to emit an optical beam into the external cavity;

a channel allocation grid element being arranged in the external cavity to define a plurality of periodic pass bands substantially aligned with corresponding channels of a selected wavelength grid, each of the pass bands having a bandwidth at full-width half maximum (FWHM); and

a ~~tuneable~~ tunable element arranged in the external cavity to tuneably select one of the pass bands so as to select a channel to which to tune the optical beam,

wherein said physical length of the external cavity is not larger than 15 mm and the bandwidth FWHM of the channel allocation grid element is 2 to 8 GHz.

26. (Previously Presented) The laser system according to claim 25, wherein the bandwidth of the channel allocation grid element at FWHM is 3 to 6 GHz.

27. (Previously Presented) The laser system according to claim 25, wherein the physical length is not larger than 12 mm.

28. (Previously Presented) The laser system according to claim 25, wherein the laser emission frequency is selected on a single cavity mode within a given frequency accuracy which is not smaller than 0.5 GHz and the bandwidth of the channel allocation grid element at FWHM is selected so that the minimum distance between two adjacent cavity modes of the external cavity within the pass bands of the channel allocation grid element is not larger than twice the frequency accuracy.

29. (Currently Amended) The laser system according to claim 25, wherein the selected wavelength grid has a channel spacing of 25 to ~~50~~ 200 GHz.

30. (Previously Presented) The laser system according to claim 25, wherein the selected wavelength grid has a channel spacing of 25 or 50 GHz.

31. (Previously Presented) The laser system according to claim 25, wherein the channel allocation grid element comprises a Fabry-Perot etalon.

32. (Previously Presented) The laser system according to claim 31, wherein the Fabry-Perot etalon is placed at an inclination angle of 0.4° to 0.8° to the perpendicular of the optical beam.

33. (Previously Presented) The laser system according to claim 31, wherein the Fabry-Perot etalon is placed at an inclination angle of 0.5° to the perpendicular of the optical beam.

34. (Currently Amended) The laser system according to claim 25, wherein the ~~tuneable~~ tunable element has a bandwidth at FWHM of 50 to 250 GHz.

35. (Previously Presented) The laser system according to claim 34, wherein the tunable element has a bandwidth at FWHM of 50 to 100 GHz.

36. (Currently Amended) The laser system according to claim 25, wherein the ~~tuneable~~ tunable element comprises a ~~tuneable~~ tunable mirror placed at one end of the external cavity.

37. (Currently Amended) The laser system according to claim 36, wherein the ~~tuneable~~ tunable mirror is an electro-optical element that comprises a waveguide formed onto a substrate and a diffraction grating formed onto the waveguide.

38. (Currently Amended) The laser system according to claim 37, wherein the ~~tuneable~~ tunable mirror further comprises a cladding layer that fills at least the interstices of the diffraction grating, said cladding layer comprising a liquid crystal material.

39. (Previously Presented) The laser system according to claim 25, wherein the gain medium is a semiconductor laser diode.

40. (Previously Presented) The laser system according to claim 25, wherein the laser emission frequency is selected on a single transversal cavity mode.

41. (Currently Amended) A method for controlling a laser emission frequency of a ~~tuneable~~ tunable laser system having an external cavity defining a plurality of cavity modes spaced from each other by $(FSR)_{cavity}$, the laser emission frequency being selected on a single longitudinal cavity mode, comprising the steps of:

tuning an optical beam emitted from a gain medium to a corresponding centre frequency of a pass band selected from a plurality of periodic pass bands substantially aligned with corresponding channels of a selected wavelength grid element; and

selecting the bandwidth at FWHM of the selected pass band so that

~~FWHM < 2.5(FSR)$_{cavity}$ and~~

~~FHWM ≥ 2 GHz~~

2 GHz ≤ FWHM ≤ 8 GHz, and

selecting the $(FSR)_{cavity}$ to be larger than about 8 GHz.

42. (Cancelled)

43. (Currently Amended) The method according to claim [[42]] 41, wherein the bandwidth at FWHM of the selected pass band is 3 to 6 GHz.

44. (Currently Amended) The method according to claim [[42]] 41, wherein the channels of the selected wavelength grid element have a channel spacing of 25 to 100 GHz.

45. (Previously Presented) The method according to claim 44, wherein the bandwidth at FWHM of the selected pass band and s_{min} satisfy the following relationship:

$$FWHM = \alpha + \beta \cdot s_{min}$$

where α is -0.8 to -2.7 GHz and β is 1.2 to 2.6.

46. (Previously Presented) The method according to claim 41, further comprising the step of aligning the laser emission frequency with the selected pass band by adjusting the injection current of the gain medium so as to maximise the laser output power.

47. (Currently Amended) A method for controlling a laser emission frequency of a ~~tuneable~~ tunable laser system having an external cavity defining a plurality of cavity modes spaced from each other by $(FSR)_{cavity}$, the laser emission frequency being selected on a single longitudinal cavity mode within a given frequency accuracy, comprising the steps of:

tuning an optical beam emitted from a gain medium to a corresponding centre frequency of a pass band selected from a plurality of pass bands substantially aligned with corresponding channels of a selected wavelength grid element;

selecting the $(FSR)_{cavity}$ to be larger than about 8 GHz; and

selecting the bandwidth at FWHM of the selected pass band ~~so that it is not larger than $2.5(FSR)_{cavity}$ and so that~~ to be comprised between about 2 GHz and about 8 GHz so as to introduce cavity mode compression in correspondence to the selected pass band and so as to cause the minimum distance between two adjacent cavity modes of the external cavity within the pass band, s_{min}, ~~is~~ to be not larger than twice the frequency accuracy.

48. (Previously Presented) The method according to claim 47, wherein the frequency accuracy is not smaller than 0.5 GHz.